

IN THE CLAIMS:

The following Listing of Claims replaces all prior Listings and versions of claims in the above-identified application.

Listing of Claims

1. (Original) An isolated protein, comprising an amino acid sequence selected from the group consisting of:

- a. an amino acid sequence selected from the group consisting of SEQ ID NO:42 and SEQ ID NO:61; and,
- b. a homologue of said amino acid sequence of (a), wherein said homologue is at least about 35% identical to SEQ ID NO:61 over at least about 170 contiguous amino acids of SEQ ID NO:61;

wherein said protein has 10,12-linoleate isomerase enzymatic activity.

2-10. (Cancelled)

11. (Original) The isolated protein of Claim 1, wherein said protein comprises an amino acid sequence selected from the group consisting of SEQ ID NO:42 and SEQ ID NO:61.

12. (Original) The isolated protein of Claim 1, wherein said protein comprises an amino acid sequence SEQ ID NO:61.

13. (Original) The isolated protein of Claim 1, wherein said protein is selected from the group consisting of *Propionibacterium acnes*, *Propionibacterium acidipropionici* and *Propionibacterium freudenreichii* linoleate isomerases.

14. (Cancelled)

15. (Original) The isolated protein of Claim 1, wherein said linoleate isomerase converts linoleic acid and linolenic acid to (*trans*, *cis*)-10,12-linoleic acid.

16. (Original) The isolated protein of Claim 1, wherein said protein has a specific linoleic acid isomerization activity of at least about 10 nmoles CLA mg⁻¹ min⁻¹.

17-18. (Cancelled)

19. (Original) The isolated protein of Claim 1, wherein said protein is a soluble enzyme.

20. (Original) The isolated protein of Claim 1, wherein said protein comprises a leader sequence which causes insertion of said protein into the membrane of a cell which expresses said protein.

21. (Original) The isolated protein of Claim 1, wherein said protein is bound to a solid support.

22-23. (Cancelled)

24. (Original) An isolated antibody that selectively binds to the isolated protein of Claim 1.

25. (Original) An isolated protein comprising an amino acid sequence selected from the group consisting of:

- a. an amino acid sequence selected from the group consisting of SEQ ID NO:42 and SEQ ID NO:61; and,
- b. a homologue of said amino acid sequence of (a), wherein said homologue comprises an amino acid sequence that aligns with SEQ ID NO:73 using Martinez/Needleman-Wunsch DNA alignment method with a minimum match of 9, a gap penalty of 1.10 and a gap length penalty of 0.33, wherein amino acid residues in said amino acid sequence align with at least about 70% of non-Xaa residues in SEQ ID NO:73;

wherein said protein has 10,12-linoleate isomerase enzymatic activity.

26. (Cancelled)

27. (Original) A method for producing CLA (conjugated linoleic acid or conjugated linolenic acid) or derivatives thereof, comprising contacting an oil, said oil comprising a fatty acid selected from the group consisting of linoleic acid, linolenic acid, and a derivative of linoleic or linolenic acid, with an isolated protein having 10,12-linoleate isomerase enzymatic activity, to convert at least a portion of said fatty acid to CLA or a derivative thereof, said isolated protein comprising an amino acid sequence selected from the group consisting of:

- a. an amino acid sequence selected from the group consisting of SEQ ID NO:42 and SEQ ID NO:61; and,

- b. a homologue of said amino acid sequence of (a), wherein said homologue is at least about 35% identical to SEQ ID NO:61 over at least about 170 contiguous amino acids of SEQ ID NO:61.

28-31. (Cancelled)

32. (Original) The method of Claim 27, wherein said protein comprises an amino acid sequence selected from the group consisting of SEQ ID NO:42 and SEQ ID NO:61.

33. (Original) The method of Claim 27, wherein said protein comprises amino acid sequence SEQ ID NO:61.

34. (Original) The method of Claim 27, wherein said fatty acid is in the form of a triglyceride and wherein said method further comprises contacting said oil with a hydrolysis enzyme to convert at least a portion of said triglyceride to free fatty acids.

35. (Original) The method of Claim 34, wherein said hydrolysis enzyme is selected from the group consisting of lipases, phospholipases and esterases.

36. (Original) The method of Claim 27, further comprising the step of recovering said CLA or derivative thereof.

37. (Original) The method of Claim 27, wherein said oil is selected from the group consisting of sunflower oil, safflower oil, corn oil, linseed oil, palm oil, rapeseed oil, sardine oil, herring oil, mustard seed oil, peanut oil, sesame oil, perilla oil, cottonseed oil, soybean oil, dehydrated castor oil and walnut oil.

38. (Original) The method of Claim 27, wherein said linoleate isomerase enzyme is bound to a solid support.

39. (Original) The method of Claim 38, wherein said solid support is selected from the group consisting of organic supports, artificial membranes, biopolymer supports and inorganic supports.

40-116. (Cancelled)